Medicine, details the results of his researches on menstruation, of which the following are the most important.

1. There exists the most intimate connection between the Graafian vesicles and menstruation. When these vesicles arrive at their full development menstruation commences, and when they are destroyed menstruation ceases.

2. At each menstrual period a follicle projects like a nipple on the surface of the ovary, where it afterwards bursts, without requiring for that purpose an erotic excitation.

3. The rupture of the follicles in general appears to take place just at the period when the menstrual discharge is stopping.

4. The ovaries do not act alternately, as has been affirmed; they do not seem to be under any fixed law as to this.—*Edin. Med. and Surg. Journ.*, April, 1843, from *Bull. de l'Acad.*, Jan. 1843.

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12. *Chemical Theory of Nutrition.* By MM. DUMAS and CAHOURS.—For a considerable period chemists have noticed in animals the existence of three neutral azotized principles, remarkable, either on account of the number of properties which are common to all, or on account of their abundance in the fluids or solids of the animal economy, or by their presence in all the essential ingredients of our food. These matters are albumen, fibrin, and casein. The albumen existing in the white of the egg, the fibrin forming the coagulable portion of the blood, the casein constituting the animal part of milk. In a physiologico-chemical essay, read to the Academy of Sciences about eighteen months ago, by MM. Boussingault and Dumas, it was endeavoured to be proved that albumen, casein, and fibrin existed in plants; that these matters passed ready formed in the bodies of the herbivorous animals, from whence they were transferred into those of the carnivoræ; that plants alone possess the power of forming these three products, which animals separate either for the purpose of assimilating to their own bodies, or to destroy them, according as the wants of their system demand. MM. Dumas and Cahours, in the present memoir, have extended these principles to the formation of the fatty matters, which, they state, take their origin in plants, but in animals undergo a species of combustion, or remain as transitory parts of the body. They have also urged the necessity of grouping together all the organic bodies which possess the property of passing into the state of lactic acid during fermentation, and which, as sugar and starch, form an essential ingredient in the food of man and the lower animals, and are only produced in plants by the powers of vegetation.

The details of these views, and the conclusions drawn from them, may be thus shortly stated.

The vegetable kingdom produces or forms the neutral azotized principles, the fatty matters, sugar, starch, and gum; the animal kingdom, on the other hand, consumes these. The first decomposes the carbonic acid, water, and ammoniacal salts formed by the second; which in its turn absorbs oxygen for the disengagement of these. The animal produces or gives out heat and electricity; the vegetable, on the other hand, absorbs them. The vegetable is a decomposing apparatus which forms new products, and is fixed in one spot; the animal is an oxidizing apparatus, endowed with locomotive powers.

"If, as we hope," continues MM. Dumas and Cahours, "physiologists recogonise with us that plants are destined to create albumen, fibrin, casein, but that animals only modify these matters, assimilate them, or destroy them, but cannot create them, we shall esteem ourselves happy, after having been the first to publish such opinions, to be also the first to furnish to science the rigorous analysis of these substances, so often studied for some years past. To avoid confusion, however, it ought to be stated, that, in so far as albumen is concerned, this opinion was previously announced by MM. Prevost and Le Royer, in their Memoir on Digestion; but it ought also to be stated that they did not adduce sufficient proofs to convince physiologists. More lately the same opinion was entertained by Mulder, who, reasoning simply on the identity of composition, which he established to exist between vegetable and animal albumen, did not hesitate to conclude that the albumen of the herbivorous animals was procured from the vegetable which served them as nourishment.

"A granivorous bird finds in grain all the elements necessary for its nutrition. A dog finds in bread the matters which its organization requires for the purpose of life and of growth. A cow which is giving milk not only finds in barley and oats the matters requisite for its own existence, but also the substance by means of which the casein is formed, which is found in its milk. The cerealia ought, therefore, independent of the amylaceous or sugary matters they contain, to furnish to the animal organization the neutral azotized substances which every animal body consists of, and which we have seen that the animal body cannot create. The analysis of corn, or the flour formed of it, is quite conclusive on this point. If we take some flour, and after forming it into a consistent paste, wash it slowly under a fine stream of water, there remains in the hand a grayish-coloured tough elastic paste, of a faint odour, which constitutes the gluten of the old chemists. The turbid water which ran off carried with it the fecula, a few flakes of gluten, and all the soluble matters. But if this liquid is left in repose, and be decanted, so as to procure it free of the fecula which is deposited, it is only necessary to boil it to recognize in it the presence of albumen. On the other hand, if we take the gluten, as it remained in the hand after the washing, four distinct substances, at least, may be recognized in it. In fact, if we boil this substance first with absolute alcohol, and then in proof spirit, we obtain a fibrous, grayish-coloured residue, which may be named vegetable fibrin. The alcoholic liquors allowed to cool furnish a substance possessing those properties which we assign to ordinary casein. If the alcoholic liquors are then concentrated and allowed to cool, pultaceous substance is formed, which presents all the characters of albuminous matters, but which, on account of some special properties, deserves more particularly the name of gluten. Along with this gluten is deposited a fatty matter, which is easily removed by means of ether, and which does not differ from the ordinary oils or fats, or rather from butter, which it resembles in its point of fusion.

"The analysis of the flour of the cerealia thus enables us to ascertain the presence of, 1. albumen; 2. fibrine; 3. casein; 4. gluten; 5. fatty matters; 6. fecula, dextrin, and glucose.

"We therefore regard it as proved that the food of animals includes the first four of these substances, that is to say, the azotized substances, or at least some of them. We admit that in those cases where the fecula, dextrin, and sugar disappear from the food, they are replaced by fatty matters, as we see occurs in the food of the carnivorous animals. In fine, we see that the association of neutral azotized principles with fatty, sugary, or starchy principles, constitutes the almost entire food of all herbivorous animals.

"Does it not follow from this that there are two fundamental principles in nutrition, viz. 1. That neutral azotized and organized matters are indispensable as articles of food in the nutrition of animals; and 2. That animals can, to a certain extent, subsist without taking fatty matters, or without taking starchy or saccharine principles, provided that in the one case the fatty matters shall be replaced by a proportional quantity of starch or sugar, or in the other by fatty substances?

"The indispensable necessity which all animals are under to take with their food those neutral azotized principles which exist in their organization, almost of itself demonstrates that they are incapable of creating these substances. But to render this fully apparent, it is only necessary to follow these neutral azotized principles when introduced into the stomach, and see what is their final destination. It is tolerably easy to prove that these substances are found essentially represented by the urea, which, in man and the higher animals, constitutes the essential principle of the urine, and by the uric acids in birds and reptiles, a substance which takes the place of the urea in them. Without counting the excrements, an adult man absorbs daily a quantity of neutral azotized matter capable of representing about four drachms of azote, a quantity which is found entire in the eight drachms of urea, which are passed with the urine voided during the twenty-four hours.

"Leaving out of question all those phenomena which pass in the interior of the organs, and considering only the balance of the ingesta and egesta, we find that a man gives out in urea nearly all the azote which he took in under the form of a neutral matter. Is it not, therefore, reasonable to conclude, that the neutral azotized matters of our food serve to procure this urea, and that the whole industry of the animal organism is limited either to the assimilation of this azotized matter, when the wants of the system require it, or to convert it into urea?"—*Ibid.* from *Comptes Rendus de l'Acad. des Sci.*, Nov. 28, 1842.

13. *Urea in healthy Blood.*—M. Franz Simon has always been able to detect the presence of urea in the blood of patients labouring under Bright's disease. To exhibit this principle two or three ounces of blood are precipitated by means of alcohol, and when the liquid is filtered, the filtered fluid is evaporated in the vapour bath to the consistence of a syrup. Fresh alcohol is poured on this, the clear liquor removed, evaporated, and the process again repeated, till the anhydrous extract dissolves completely in alcohol without leaving any residue. It is then evaporated to dryness, dissolved in distilled water, filtered to remove the fat, and evaporated to the consistence of a syrup. A little is then put on glass, a drop of cold nitric acid added, and it is allowed to rest till a saline crust forms. When this crust is examined by means of a microscope, the rhomboidal tabular crystals, of which the nitrate of urea is composed, are easily recognized.

By this means M. Simon has not only detected the presence of urea in the blood of cholera patients, but found also that it exists in all healthy blood; but in the healthy blood it exists in very small quantity.—*Ibid.* from *Annales des Sci. Nat.*, Dec. 1842.

MATERIA MEDICA AND PHARMACY.

14. *Ferruginated Pill of Mercury.* By G. F. Collier, M. D.—The varying and unsatisfactory quality of our "blue-pill" has for many years attracted attention. In my second edition of the "London Pharmacopœia" I gave the outline of a formula for preparing it with sesquioxide of iron; the further experience of years enables me to offer this preparation to the profession as a boon to them and to the public, for it may be proved that the iron enters along with the mercury into the blood, and saves the wear and tear of the human body under its use. I will not, at this time canvass, because I doubt, the probability of the sesquioxide (in double equivalents) yielding up one atom of its oxygen to the mercury, as is the opinion of several chemists to whom I have submitted this compound. I am aware that other peroxides, when moist, will similarly combine and divide mercurial globules; and I will not now enter upon the series of incomplete experiments instituted by myself to prove that mercury will amalgamate with other metallic oxides, and in this state form double or triple salts with acids. I shall now keep only to the practical utility of my compound, and to its importance as a great remedial improvement.

In the spirit of a pharmaceutical chemist I should either exclusively manufacture and sell it over my own counter, or I should take out a patent for it; in that of a manufacturing chemist I should do the like, or keep it a secret and save a fortune by it; were I of the new school of "summi auctores" I should throw the mere shadow of it, chemical, mesmerical, magnetical, and homœopathical, into a modest pamphlet, proving that the era of medicine truly commenced in 1843, and that up to that time all were shadows, clouds, and darkness. I shall content myself with publishing the recipe, and recording a brief statement of my experience.